REMARKS

This is in response to the final Office Action mailed on January 30, 2006, in which claims 1-3 and 7-15 were rejected under 35 U.S.C. § 102(e) as being anticipated by Lin et al. (U.S. Pat. App. Pub. 2003/0189798); and claims 4-6 and 17 were rejected under U.S.C. § 103 as being unpatentable over Lin et al. With this Amendment, claim 1 is amended. Claims 1-24 remain pending in the present application.

Claims 1-3 and 7-15 were rejected under 35 U.S.C. § 102(e) as being anticipated by Lin et al. In order to reject a claim under § 102(e), the reference must teach each and every limitation of the claims. MPEP 2131; *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987). With this Amendment, claim 1 is amended. Amended claim 1 recites a magnetic sensor comprising a sensor stack and "means for providing an electric field that creates a charge carrier depleted region in the sensor stack to produce an electrical dimension of the sensor stack which is smaller than a corresponding physical dimension of the sensor stack." Claim 11 as originally submitted recites a magnetoresistive read head comprising a magnetoresistive stack and "a first bias electrode positioned with respect to the magnetoresistive stack such that an electrical width of the magnetoresistive stack is a function of a bias voltage applied to the first bias electrode."

Lin et al. teach a GMR read head 200 including a read sensor 204 and a longitudinal bias (LB) stack 208 in a read region 212. Paragraph 0029. A monolayer photoresist 260 is deposited, exposed, and developed in order to open the read trench region 212 for the definition of a read width. By then reactive ion etching first conductor layer 236, two spaced apart portions 262 of first conductor layer 236 are created, each having a sharply defined opposing face 292 that serves to help define the read width 212 of the GMR read head 200. Paragraph 0031. "The designed read width 212 can be substantially unambiguously attained since three factors for defining the boundary between the read and overlay regions, one physically by the monolayer photoresist width, one magnetically by the LB stack, and the third electrically by the first conductor, *all lead to a substantially identical read width 212*." Paragraph 0031,

emphasis added. In other words, GMR read head 200 is designed such that the physical read width is identical to the electrical read width. This accomplishes the stated goal of Lin et al., which is to sharply define the boundaries between the read and overlay regions. Paragraph 0008. However, this approach requires separate optimization of various device properties, including physical line width and stabilizing magnet strength. See page 3, lines 1-9 of the present application.

However, Lin et al. do not disclose that spaced apart portions 262, second conductor layer 280, or any other portion of GMR read sensor 204 provides an electric field that that creates a charge carrier depleted region in the GMR read sensor 204 to produce an electrical dimension which is smaller than a corresponding physical dimension, as is required by claim 1. Lin et al. also do not disclose that the electrical width of GMR read sensor 204 is a function of a bias voltage applied to spaced apart portions 262, second conductor layer 280, or any other portion of GMR read sensor 204, as is required by claim 11. By producing an electrical dimension of the sensor stack that is smaller than its corresponding physical dimension, the resolution of the sensor is increased without requiring adjustment of intricate physical dimensions. Page 6, lines 3-6. As a result, a device having highly controllable electrical dimensions is produced without requiring separate optimization of other device properties. Therefore, because the recited elements of claims 1 and 11 are not disclosed by the prior art, the rejection to claims 1 and 11 under 35 U.S.C. § 102(e) should be withdrawn.

Claims 2, 3, 7-10, and 12-15 were also rejected under 35 U.S.C. § 102(e) as being anticipated by Lin et al. Claims 2, 3, and 7-10 depend from claim 1, and claims 12-15 depend from claim 11. As discussed above, claims 1 and 11 are not anticipated or otherwise taught by Lin et al. Therefore, claims 1 and 11 are also not anticipated or otherwise taught by Lin et al.

Claims 4-6 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lin et al. As discussed above, claims 1 and 11 now in a condition for allowance. Claims 4-6 depend from allowable claim 1, and claim 17 depends from allowable claim 11, and as such are allowable with their respective independent base claims. In addition, it is respectfully submitted that the combinations of

features recited in claims 4-6 and 17 are patentable on their own merits, although this does not need to be specifically addressed herein since any claim depending from a patentable independent claim is also patentable. See MPEP 2143.03, citing *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Claims 18-24 were previously withdrawn from consideration as being drawn to a non-elected species. Claims 18-24 depend from allowable independent claim 11. Thus, claim 18-24 should also be considered and allowed, since they depend from an allowable generic independent claim. See MPEP 809.02 and 37 C.F.R. 1.146.

CONCLUSION

In view of the foregoing, it is believed that all claims in the present application are in condition for allowance. Reconsideration and allowance of claims 1-17 are respectfully requested. In addition, claims 18-24 should also be considered and allowed, since they depend from allowable generic independent claim 11. A Notice of Allowance with respect to all claims 1-24 is respectfully requested.

Respectfully submitted,

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